MANUAL CHAPTER 2602

DECOMMISSIONING INSPECTION PROGRAM FOR FUEL CYCLE FACILITIES AND MATERIALS LICENSEES

2602-01 PURPOSE

To establish the inspection program for fuel cycle facilities and materials licensees undergoing decommissioning.

2602-02 OBJECTIVES

02.01 To establish the general policy for the decommissioning inspection program for fuel cycle and materials licensees undergoing decommissioning.

02.02 To provide general guidance for planning and conducting inspections of fuel cycle and materials licensees undergoing decommissioning.

02.03 To aid in the achievement of a consistent process of inspection for facilities undergoing decommissioning.

2602-03 DEFINITION

03.01 Decommission. To remove (as a facility) safely from service and reduce residual radioactivity to a level that permits release of the property for unrestricted use and termination of the license.

2602-04 RESPONSIBILITIES AND AUTHORITIES

04.01 All NRC personnel implementing the decommissioning inspection program shall use the guidance identified in this manual chapter. Significant deviations from this guidance shall be approved by the regional management prior to performing an inspection.

04.02 This inspection program applies to all NRC licensees under 10 CFR Parts 30, 40, and 70 undergoing decommissioning. The principal regulations and policy governing such decommissioning are: (1) General Requirements for Decommissioning Nuclear

Facilities, Final Rule, 53 FR 24018, June 27, 1988, which incorporated changes into 10 CFR Sections 30.4, 30.35, 30.36, 40.4, 40.36, 40.42, 70.4, 70.25, 70.38, 72.3, 72.18, and 72.38; (2) Timeliness in Decommissioning of Materials Facilities, Final Rule, 59 FR 36026, July 15, 1994, which incorporated changes into 10 CFR Sections 30.4, 30.36, 40.4, 40.42, 70.4, 70.38, 72.3, and 72.54; and (3) Policy and Guidance Directive FC 83-23, Termination of Byproduct, Source and

Special Nuclear Material Licenses, November 4, 1983. Various guidance documents are referenced in this inspection program and should be utilized by NRC inspection staff for applicability to each site undergoing decommissioning.

04.03 The responsibility for inspection resides with the regional office in which the licensee is located. The DRSS regional management is responsible for developing the inspection program for each site under its jurisdiction. The Division of Waste Management (DWM), in the Office of Nuclear Material Safety and Safeguards (NMSS), will provide overall program direction to the regional offices for decommissioning facilities. In general, DWM will provide oversight guidance and site-specific support to the regions for all decommissioning facilities to ensure that licensees are approaching decommissioning in a consistent and adequate manner to protect public health and safety.

2602-05 GENERAL GUIDANCE

05.01 Type of Inspection Activities. Many of the inspection activities required during decommissioning are similar to inspection activities conducted at operating facilities. Therefore, the inspection guidance given in this decommissioning inspection program utilizes, to the extent practicable, existing sections of the NRC Inspection Manual. Section 05.11 below lists specific existing inspection procedures applicable to decommissioning. Inspections shall be conducted against NRC regulations (e.g., Part 20 radiation safety requirements for exposures to workers and ALARA), NRC-approved decommissioning plans (e.g., a licensee remediation, characterization, or final survey plan), and license conditions (e.g., limits for onsite disposal of certain radioactive materials).

05.02 Extent of Licensee Decommissioning Activities. It is anticipated that fuel cycle facilities will require a defined, substantial decommissioning effort. In contrast, most of the non-fuel cycle materials licensees have facilities which, for the most part, will not require submittal of a formal decommissioning plan for NRC review and approval and will not be a major effort. When decommissioning activities are similar to routine cleanup and maintenance activities during operations, then inspectors should be able to continue using routine inspection procedures and perform a closeout inspection (IP 83890) when license termination is requested. A few of the non-fuel cycle facilities, however, such as manufacturers of radiochemicals and certain research and development institutions, will typically require significant decommissioning efforts by the licensees and significant inspection activities by NRC inspection staffs. Where decommissioning is complicated and submittal of a decommissioning plan is required, the region should develop a site-specific inspection plan utilizing the inspection procedures listed in this manual chapter.

05.03 Timing and Frequency of Inspections. Decommissioning inspection procedures are formally initiated when the licensee is required to begin decommissioning under NRC regulations. The inspection program continues until the site, including all

buildings and other structures and outdoor areas, is remediated in accordance with NRC requirements and the license is terminated (if the decommissioning involves the entire site).

At the onset of decommissioning, an inspection schedule should be developed by the inspection staff and the licensing Project Manager (or other staff having licensing authority), based on planned site characterization, remediation, final and confirmatory surveys, and other decommissioning activities to be conducted at the facility.

Some sites have separate buildings and outdoor areas where licensed activities have ceased and are being decommissioned, while licensed activities continue to be conducted at other site locations. In these cases, inspections of the locations being decommissioned can be coordinated with normal inspection of routine operations or be performed independent of operations at the discretion of the inspection staff.

The inspection schedule should be modified as needed to reflect changes in licensee schedules.

The frequency of inspections, may vary, depending on the significance of the decommissioning effort, but should allow the inspector to observe key decommissioning activities. For example, no formal inspection related to license termination may be necessary for a medical practitioner licensed to use a sealed source, where the decommissioning effort is essentially the removal of the source from the licensee's facility. For a facility such as a fuel fabrication plant in an active dismantlement phase, there may be many inspections made during the decommissioning process; the frequency of the inspections would be based on the inspection history of the licensee and the potential for planned decommissioning activities to affect the health and safety of workers and the public.

Inspection frequencies will vary, based on the nature of the decommissioning activities underway, the health and safety significance of those activities, and licensee performance. The minimum inspection frequency for a site in a standby or possession-only status with no ongoing remediation activities should be consistent with the guidance in IMC 2600 and IMC 2800. The minimum inspection frequency for a site undergoing active remediation of structures, soils, or groundwater should be at least once every 12 months. For major decommissioning efforts that involve large quantities of contaminated soil, groundwater contamination, onsite disposal, extensive surface contamination, dismantlement of major buildings and structures, or the potential for significant worker or public exposures, at least one inspection should be conducted while the site is being characterized. For such major efforts, the inspection schedule should also include an inspection during remediation of key buildings, equipment, and outdoor areas, and during and after the licensee's final survey. In general, inspections may be conducted more frequently if necessary to verify that work and public exposures are maintained ALARA.

Inspection staffs may want and need to use both announced and unannounced inspections throughout the decommissioning process. Where practicable, inspections shall be unannounced. For announced inspections, the inspector's efforts to coordinate the inspection with the licensee will assure that licensee activities will be performed and that licensee staff will be available on the planned inspection date. For unannounced inspections on facilities and outdoor areas where no routine or daily decommissioning activities are being performed by the licensee, the inspector will need to carefully monitor licensee activities to select dates for inspections when decommissioning activities are being performed and licensee staff are available.

05.04 Security and Control of Contaminated Material. Inspections conducted throughout decommissioning shall continue to assess licensee security and control of contaminated material. Inspections shall verify that contaminated material at licensed and unlicensed sites undergoing decommissioning is secured and controlled in accordance with 10 CFR 20.1801, and posted in accordance with 10 CFR 20.1902. Containers of contaminated materials shall be labelled in accordance with 10 CFR 20.1904 and 20.1905. Contaminated materials in buildings shall be secured and controlled by locking buildings, rooms, or areas. Contaminated materials in outside areas shall be secured and controlled by fencing or soil covers. Eight foot cyclone-type fencing is generally acceptable. Other fencing types, such as barbed wire fences, may be sufficient in low population, rural areas. Three to four foot thick soil covers over contaminated soil, slag, or tailing piles are also generally acceptable. Access to buildings, rooms, or indoor and outdoor areas having contaminated materials shall be limited only to individuals having the licensee's or responsible party's permission for access.

Normally, decommissioning activities will not involve materials subject to safeguards requirements. On decommissioning sites that do involve materials subject to safeguards requirements, safeguards inspections should be coordinated with decommissioning inspections on an as needed basis.

05.05 Inspection Coordination. Prior to performing an inspection of a site undergoing decommissioning, the inspector should coordinate with the following personnel and organizations:

- Coordinate with the NRC licensing Project Manager (or other staff having licensing authority) having licensing project management responsibility for the site. The licensing Project Manager will be either regional or NMSS staff. The inspector should offer the licensing Project Manager an opportunity to accompany the inspector during inspections.

- Coordinate with the regional inspection staff manager for overall content and scheduling considerations.

- Contact the Technical Monitor, if any, for the site and discuss inspection plans.

- For sites with an NRC-approved decommissioning plan - where the environmental assessment for the decommissioning plan identifies Federal, State and other organizations interested in or affected by site activities - contacts should be made in accordance with established procedures at each site.

- Coordinate with the U.S. Environmental Protection Agency or the appropriate State agency if the decommissioning involves hazardous wastes.

- Coordinate requests for technical assistance for survey work to be performed by an NRC contractor through the NMSS Technical Monitor for Survey Contracts, and obtain approval for funding of such requests through the NMSS Technical Assistance Project Manager, in accordance with IMC 0312. It is recommended that contractor support be engaged early in the decommissioning process to review licensees' survey plans and proposed instrumentation for conformance with NUREG/CR-5849.

05.06 Radiological Criteria for Decommissioning. All sites will be decommissioned and licenses will be terminated in accordance with NRC guidance in Policy and Guidance Directive FC 83-23 and criteria provided in NRC-approved decommissioning plans. Pending promulgation of the final rule on radiological criteria for decommissioning, licensees are expected to comply with current concentration criteria and practices as described in Policy and Guidance Directive 83-23 and in the NRC Action Plan Ensuring Timely Decommissioning of Site Decommissioning Management Plan Sites (57 FR 13389; April 16, 1992). The Action Plan includes US EPA interim maximum contamination levels for radionuclides in public drinking water (40 CFR Part 141; 41 FR 38404, July 9, 1976) which should be used as reference standards for protection of groundwater and surface water resources. Final surveys should be conducted in accordance with NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination.

05.07 Scope of Inspections - General. It is recommended that all significant activities of a particular site undergoing decommissioning - including prior to, during, and after remediation - be identified and inspected. Major efforts in the inspection program should be focused on those activities where either data or experience indicate that potential problems may exist. In most cases, field sampling and independent measurements performed by inspection staff should be consistent with that performed during routine surveys associated with the use of licensed materials during operations at the site.

Inspectors should review environmental data related to airborne and liquid effluent releases and groundwater sampling for compliance with NRC standards and requirements. Airborne and liquid effluents should meet 10 CFR Part 20 requirements. Groundwater monitoring should be performed at sites with substantial volumes of contaminated soils, known groundwater impacts, or onsite disposal areas. If groundwater concentrations exceed US EPA interim maximum contamination levels for radionuclides in public drinking water systems (40 CFR Part 141), Headquarters geohydrological staff

should be consulted to evaluate the significance of the groundwater contamination and the need for further groundwater monitoring programs.

05.08 Scope of Inspections Prior to Dismantlement. During the typical decommissioning effort, there are planning and preparation activities that occur prior to dismantlement that may require inspection. Inspections may be conducted to: ensure proper implementation of NRC-approved site characterization plans; audit the SNM inventory cleanout (for SNM licensees); and ensure adequate management and security controls for the duration of the decommissioning effort. In addition, the inspector should review the license for any new conditions that may have been added for decommissioning.

05.09 Scope of Inspections During Remediation and Dismantlement. The remediation of structures, soil, sediment, surface waters and groundwater, the dismantlement of buildings and other structures, and the disposal of waste constitute the majority of a typical decommissioning effort for sites with widespread contamination. Inspections shall be conducted against NRC regulations, approved decommissioning plans, and license conditions for key decommissioning activities that are important for health and safety. These activities include: physical security; criticality safety; essential systems and services; radiation protection for workers; material control and accountability, if applicable; environmental programs related to possible offsite releases of radioactive materials; fire protection; onsite waste management prior to offsite disposition; transportation of radioactive wastes for disposal; and implementation of a licensee quality assurance program carried on throughout the decommissioning process.

05.10 Scope of Inspections After Remediation. Decommissioning activities after remediation of the site include a licensee-conducted final survey and an NRC confirmatory survey.

Licensee Final Survey - As part of the decommissioning plan, the licensee will prepare a final survey plan. The purpose of the final survey will be to demonstrate compliance with the NRC decommissioning criteria. The final survey should include the licensed premises and offsite areas that were or may have been contaminated by the licensee's operations. Although the formal NRC review and acceptance of a licensee's final survey plan and report is performed by the NRC licensing Project Manager (or other equivalent staff), it is recommended that inspectors have adequate familiarity with these licensee documents to facilitate planning and executing inspections. As necessary to ensure confidence in the licensee's survey results, the inspection may include independent NRC analysis of the licensee's samples.

A final survey and report may not be required if a licensee can demonstrate the absence of radioactive contamination in some other manner, such as documentation that the licensee used only sealed sources that never showed evidence of leakage.

NRC Confirmatory Survey - The purpose of the NRC confirmatory survey is to perform an audit of the licensee's final survey

results to independently confirm that the licensee's final survey report is accurate and representative of site conditions. Comprehensive confirmatory surveys should only be necessary if there is significant doubt regarding the licensee's final survey results. For example, a confirmatory survey would be needed if an in-process inspection of the licensee's final survey program identifies multiple weaknesses. Although not all inclusive, other conditions which may indicate the need for a confirmatory survey include: 1) repetitive violations, 2) significant public or Congressional interest, or 3) the site is small, making an "in-process" inspection of the licensees final survey impractical.

NRC confirmatory surveys should not be used to demonstrate, for the licensee, compliance with NRC residual contamination standards. The licensee always retains responsibility for compliance. The licensee's final survey plan and report should be adequate to demonstrate the condition of the site before any confirmatory survey is conducted by NRC or its contractor. Licensee surveys and NRC confirmatory surveys may be conducted in phases as decommissioning proceeds.

Prior to arranging a confirmatory survey, the inspector should review the documentation of decommissioning activities and the results of the licensee's final radiological survey. Any questions or concerns that the inspector might have concerning the survey should be communicated to the licensing project manager for substantiation or clarification. When such issues are resolved to the inspection staff's satisfaction, a written confirmatory survey plan should be prepared, and the survey conducted at the earliest possible date. Unresolved issues related to the adequacy of the licensee's final survey report should be communicated to DWM Headquarters staff before planning a confirmatory survey.

Confirmatory surveys may be performed by regional staff or by technical assistance contract support. In most cases, contractor support will not be necessary. The use of a contractor may be justified if one of the following conditions exist: 1) the licensee's final survey involves unique or complex technical issues, 2) the confirmatory survey is expected to require more than a man-week effort to complete field surveys and sampling, and 3) the confirmatory survey is a very high priority that cannot be completed by NRC staff in a timely manner. In addition to the three conditions listed above, there may be other site-specific considerations that justify the use of a contractor. Contractual support should be coordinated through the NMSS Technical Monitor for Survey Contracts and the licensing project manager. Inspectors should be onsite for at least part of the confirmatory surveys performed by contractors. Coordination with contractors should be initiated at the earliest time to develop high quality plans for the confirmatory surveys.

05.11 Documentation of Inspections

The inspection staff shall fully document, in the form of a written report, all visits to and inspections of each site undergoing decommissioning. All inspection activities should be documented in the report. Inspectors should be certain to document the results of the inspection activities related to the security and control of radioactive materials and reviews of environmental data (airborne and liquid effluent releases and groundwater sampling data).

05.12 IMCs and IPs for the Decommissioning Program

The NRC Inspection Manual chapters (IMCs) and procedures (IPs) listed below are especially applicable and are recommended to be used for inspections at sites undergoing decommissioning. These documents should be used as guidelines for inspectors in determining the inspection requirements for decommissioning and radiological safety aspects of various types of licensee activities. Recommended core chapters and procedures for the decommissioning inspection program are starred (*).

Document Number	Title - Subject Area Applicable to Decommissioning
IMC 0610	"Inspection Reports" - Documentation of inspections.
IMC 2600*	"Fuel Cycle Facility Radiological Inspection Program" - Program requirements applicable to decommissioning: Sections 2600-01 through 2600-07; Appendix A, Parts I and IV.
IMC 2681*	"Safeguards Inspection of Fuel Facilities, Transport of SNM and Irradiated Fuel, and SNM Imports and Exports" - Safeguards and physical security of the site including: Sections 2681-01 through 2681-03; the physical protection inspection programs in Exhibits 1 through 6; and the material control and accounting inspection program in Exhibit 8.
IMC 2800*	"Materials Inspection Program" - Program requirements applicable to decommissioning: All sections, for licensee activities and NRC inspections that carry over from licensee operations.
IP 36100	"10 CFR Part 21 inspection" - Inspection of equipment used during decommissioning.
IP 83822*	"Radiation Protection" - Radiation protection.
IP 83890*	"Closeout Inspection and Survey" - Confirmatory surveys.
IP 83895	"Radiation Protection - Followup on Expired Licenses" - Radiation protection.
IP 84850*	"Radioactive Waste Management - Inspection of Waste Generator

& Requirements of 10 CFR 20 and 10 CFR 61" and "Radioactive Waste IP 88035* Management" - Waste management.

IP 84900 "Low-Level Radioactive Waste Storage" - Waste storage.

IP 86740* "Inspection of Transportation Activities" - Transportation of waste.

IP 87100* "Licensed Materials Programs" - Conformance to decommissioning plans and license conditions.

IP 87103 "Inspection of Incidents at Nuclear Materials Facilities" - Response to incidents.

IP 88005* "Management Organization and Controls" - Quality assurance program; records control; internal review and audit; procedure control; safety committee.

IP 88015* "Criticality Safety" - Criticality for fuel cycle facilities.

IP 88020 & IP 88025 "Operations Review" and "Maintenance and Surveillance Testing" - Surveillance testing and safety limits.

IP 88045* "Environmental Protection" - Releases to the environment.

IP 88050* & IP 88055* "Emergency Preparedness" and "Fire Protection" - Emergency planning.

IP 93001 "OSHA Interface Activities" - Interface with other agencies.

In addition to the procedures described above, inspection staffs should also use other existing parts of the NRC Inspection Manual that are routinely used on typical inspections and which are included in IMC 2600 and IMC 2800. For example, these may include: IMC 30703, on entrance and exit interviews; IP 90712, on in-office reviews of events; and IPs 92701, 92702, and 92703, on followup on inspection problems and licensee violations.

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